Docket No. 041-2077 41 2863

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

MIZUSHIMA

Art Unit: 2863

Examiner: Ngiehm, M. P.

Application No. 09/734,716

Filing Date: November 26, 2001

For: Method and Apparatus for Concurrently Estimating Respective Directions of a Plurality of Sound Sources for Monitoring Individual Sound Levels Of Respective Moving Sound Sources

PETITION UNDER 37 CFR 1.144

Commissioner for Patents
PO BOX 1450
Alexandria, VA 22313

Sir:

In response to the Office Action of October 11, 2004, Applicant respectfully petitions for withdrawal of the election of species requirement and withdrawal of the holding that claims 1 and 31 are not generic claims in the instant application.

BACKGROUND

In the Office Action of June 4, 2003, the Examiner made an election of species requirement alleging that the application disclosed nine patentably distinct species. The nine species and corresponding Figures are identified as:

Species I Figures 1-5A;

Species II Figures 6 and 7;

Species III Figures 8 and 9;

Species IV Figures 10;

Species V Figures 11 and 12;

Species VI Figures 13 and 14;

Species VII Figures 15 and 16;

Species VIII Figures 17-19; and

Species IX Figures 20 and 21.

In response to this requirement, Applicant elected Species VI, and asserted that claims 18-26, 45, and 46 read on the elected species and that claims 1-3 and 31-33 were generic to the elected species.

Applicant also traversed the restriction requirement on the basis that and the invention of Figures 1-5A, the alleged Species I, was not a species on a par with the embodiments of Figures 6-21. Rather, Figures 1-5A were directed to the base invention, and that for this reason alone, the identification of species was incorrect and had to be corrected. This traversal also reserved Applicant's right to petition any final restriction requirement.

In the next Office Action on the merits, the Examiner concluded that the invention of Figures 1-5A was a species unto itself, i.e., was not common with the other species, and made the election of species requirement final. This decision of finality serves as the basis for this Petition.

A critical basis for the Examiner's decision was the observation that the frequency analyzer section 104 shown in Figures 1-5A is not part of the system shown in the elected Species VI, Species I and Species VI are not common to each other, and therefore, they are subject to restriction.

GROUNDS FOR PETITION

This Petition alleges the presence of two factual errors in the Examiner's decision to make the restriction requirement final. The first error is the failure to correctly identify the base invention and the different species related thereto. This failure to identify the base invention also led the Examiner to incorrectly conclude that claims 1 and 31 of the invention are not generic.

The Frequency Analyzer Section 104 is Common to alleged Species I and VI.

Critical to the Examiner's reasoning for maintaining the restriction requirement is the position that the frequency analyzer section 104 is found in Figures 1-5A (Species I), is not found in Figures 13 and 14 (Species VI), and therefore identification of two different species for these two sets of drawings is proper.

The flaw in this reasoning is that, in fact, the frequency analyzer section 104 **is** found in Figure 13, just as it is found in each of Species II-IX identified by the Examiner.

Turning now to Figures 1, 2A, 2B, and 4 of the specification, a sound source direction estimation section 116 is shown. One embodiment of this section is shown in Figures 2A and 2B, with an alternative embodiment shown in Figure 4.

In both configurations, a set of frequency analyzers 104 are incorporated as an essential element. In fact, it is the sound direction estimation section 116 that is the basis for the invention. This section provides a novel method and apparatus for determining the direction of a sound source with respect to a reference position. As described on page 14, lines 3-13, "direction" here has the significance in that "Each

direction of a sound source will be assumed to be expressed as an angular displacement from a central direction.....".

Turning now to the description of Species VI, it is unequivocally clear that the frequency analyzer section 104 is also a part of this species. First, Figure 13 shows sound direction estimation section 116. The description of Figure 13 goes further in stating in conjunction with this Figure, "The embodiment is formed of ..... each of which operates as described hereinabove for correspondingly numbered sections of preceding embodiments". This disclosure makes it clear that sound direction estimation section 116 of Figure 13 operates in the same way as it is described in previous embodiments. The previous embodiment describing Section 116 is that associated with Figures 1-5A, and particularly Figures 2A, 2B, and 4, i.e., clearly describing the use of the frequency analyzer section 104. Therefore, there can be no dispute that Species VI uses the frequency analyzer section 104 to produce the output of the sound direction estimation section 116. The confusion may lie in the fact that all of the components of the sound direction estimation section 116 are not illustrated in each embodiment. This was done so as not to complicate the drawings, but the absence of the components in the drawings does not mean that they are not part of the sound direction estimation section 116. To draw such a conclusion ignores the clear import of the specification. The depiction of sound direction estimation section 116 in Figure 13 leaves no doubt that the frequency analyzer section 104 is also a part of this apparatus, and would be part of the identified species VI.

Since the frequency analyzer section 104 is part of the apparatus and method illustrated in Figures 1-5A (the alleged Species I) and is part of Figures 13 and 14 (the

alleged Species VI), the basis for the election of species is factually incorrect and must be withdrawn. Again, the invention of Figures 1-5A is part of that described in Figures 13 and 14. Figures 13 and 14 merely expand on the core concept of the invention as described in conjunction with Figures 1-5A. Because of this error, the election of species requirement is in error, and should be withdrawn.

The Sound Source Direction Estimation Section 116 and Frequency Analyzer Section 104 is Common to All Nine of the Alleged Species.

In fact, the sound source direction estimation section 116 is common to each of the nine alleged species. Referring to Species II, it is stated in lines 12-23 on page 27, "In Figure 6, ... a sound direction estimation section 116 have the respective configurations and functions described hereinabove for the correspondingly numbered components of the first embodiment. The sound source direction estimation section 116 can have the first configuration shown in Figures 2A, 2B, ... or ..... shown in Figure 4....".

A similar statement concerning the sound source direction estimation section 116 is made in conjunction with Species III of Figure 8, see lines 18-25 on page 31. A like statement for Species IV of Figure 10 is found on page 34, lines 12-20. The statement for Species V (Figures 11 and 12) can be found on page 36, lines 14-18. Species VII (Figures 15 and 16) has its statement on page 44, lines 18-24. Species VIII's statement (Figures 17-19) is found on page 50, lines 4-11. Species IX (Figures 20 and 21) has its statement on page 55, lines 22-25.

It can also be concluded that each of the Species II-IX processes the output from the sound source direction estimation section 116 so that this output is also common to all nine of the alleged species. The following chart shows how this is accomplished:

EMBODIMENT	PROCESSING OF SOUND SOURCE ESTIMATION DIRECTION OUTPUT (the "direction information")
Species II, (second embodiment) Figures 6 and 7	The direction information is processed to detect when a sound source has passed by the microphone.
Species III, (third embodiment) Figures 8 and 9	The direction information is processed to detect the passing of a sound source, and to record the corresponding sound during a specific time interval.
Species IV, (fourth embodiment) Figure 10	The direction information is processed to detect the presence of a stationary sound source, and the direction of that sound source.
Species V, (fifth embodiment) Figures 11 and 12	The direction information is processed to detect when a sound source has traversed a specific range of directions, and so is estimated to be currently passing by the microphone array 102.
Species VI, (sixth embodiment) Figures 13 and 14	The direction information is processed to detect when a sound source has passed by the microphone array 102, and the velocity of that sound source is then calculated based on an amount of change in its direction in a specific time interval, or based on the time taken for its direction to change by a specific amount.
Species VII, (seventh embodiment) Figures 15 and 16	The direction information is processed to detect when a sound source is passing the microphone array 102, and the directivity of the microphone array is adjusted in accordance with the estimated current direction of the detected sound source.
Species VIII, (eighth embodiment) Figures 17-19	The direction information is processed to detect when a sound source is passing by the microphone array 102, and one of a plurality of predetermined directivities for the microphone array is selected to be

	applied, in accordance with the current direction of the sound source.
Species IX, (ninth embodiment) Figures 20 and 21	The direction information is processed to detect when a sound source is passing by the microphone array 102, and if so, which of two opposing (linear) directions (upstream path, downstream path) the sound source is moving along. For each of these two linear directions, one of a plurality of predetermined directivities for the microphone array is selected to be applied, in accordance with the estimated current (angular) direction of the sound source.

From this Table and the description of each of the second through eighth embodiments, one can clearly see that the output or direction information of the sound direction estimation section 116, is generically covered by Figures 1-5A and claims 1-3, and 31-33 (the first embodiment) and is the essential element of the invention. It is also unmistakable that it is this "direction information" that is then processed in a number of ways by the second through eighth embodiments. What this means is that the sound direction estimation section 116 of Figures 1-5A is part of the alleged Species II-IX and cannot be a separate species as alleged by the Examiner.

Claims 1-3 and 31-33 are Generic Claims to Species II-IX.

In the outstanding Office Action, error occurs via the Examiner's conclusion that claims 1-3 and 31-33 are species claims and cannot be generic because the frequency analyzer section 104 is not found in Species VI. As demonstrated above, this finding is factually incorrect. The true posture of this application is that claims 1-3 and 31-33 claim the essential method and apparatus of the invention in terms of obtaining successive estimated directions of the sound source. The other dependent claims take

this direction information and subject it to some other operation. Thus, the Examiner's conclusion in this regard is unsupported by the facts, and must be corrected.

While it may be technically accurate that the other dependent claims are drawn to different species, the Examiner could correct the restriction requirement by properly identifying the generic claims and require election of species between a new set of species. However, Applicant submits that the attached Amendment makes it clear that generic claims 1 and 31 are patentable over the applied art, and therefore Applicant is entitled to the allowance of a reasonable number of species. It is further contended that all of the dependent claims should be allowed since the disclosed embodiment do identify a reasonable number of species. Applicant also notes that the Examiner has already indicated that allowance of generic claims would lead to allowance of the dependent claims.

RELIEF REQUESTED

Applicant respectfully requests the following:

(1) Withdrawal of the election of species requirement and specifically the Examiner's finding that the invention of Figures 1-5A is a species as are the embodiments shown in Figures 6-21;

(2) Identification that the invention shown in Figures 1-5A defines a generic invention and identification that claims 1-3 and 31-33 correspond to this invention and are also generic;

(3) Consideration of the reasons for patentability submitted in the attached Amendment so that the generic claims can be allowed; and

(4) Withdrawal of any election of species requirement that may be applied on the grounds that the generic claims are patentable, and Applicant is entitled to a reasonable number of species, i.e., Figures 6-21, so that the entire application is passed onto issuance.

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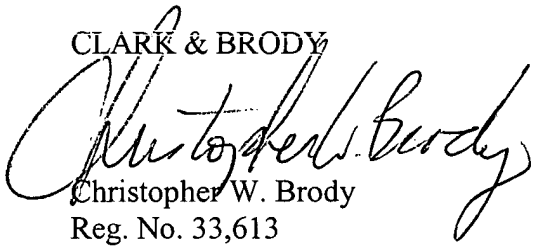
Again, reconsideration of the election of species requirement is respectfully solicited.

Respectfully submitted,

CLARK & BRODY



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